

U.S.S.N. 10/607,721
Filed: June 27, 2003
FOURTH PRELIMINARY AMENDMENT

In the Claims

1-9. (canceled)

10. (canceled) An apparatus for transmitting electromagnetic radiation to power an ingestible device, the apparatus comprising:

a support supporting a pair of transmitter coils including one or more loops operatively connectable to a source of oscillating electrical current, the support supporting the respective coils of the pair on opposite sides of the abdomen of an animal.

11. (canceled) An apparatus according to Claim 10 wherein the coils define a Helmholtz pair.

12. (canceled) An apparatus according to Claim 10, wherein the loops of the pair of coils are each of generally the same radius and are spaced from one another by between one and four times the said radius.

13. (canceled) An apparatus according to Claim 10, wherein the loops of the pair of coils are each of generally the same radius and are spaced from one another by between one and four times the said radius and wherein the loops are spaced from one another by twice the said radius.

14. (canceled) An apparatus according to Claim 12, wherein the spacing between the loops lies in the range 400mm – 800mm.

15. (canceled) An apparatus according to Claim 10 including three said coil pairs supported on the support whereby to provide three mutually skewed fields.

16. (canceled) An apparatus according to Claim 15 wherein the coil pairs provide three mutually orthogonal fields.

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17. (canceled) An apparatus according to Claim 10 wherein the frequency of the oscillating field generated by the or each coil pair is in the range 1MHz – 14MHz.
18. (canceled) An apparatus according to Claim 17 wherein the said frequency is in the range 1MHz – 3MHz.
19. (canceled) An apparatus according to Claim 10 including shielding that inhibits the transmission of short wave electrostatic radiation.
20. (canceled) An apparatus according to Claim 10 including shielding that inhibits the transmission of long wave radio waves.
21. (canceled) An apparatus according to Claim 10 wherein the support is or includes a wearable garment.
22. (canceled) An apparatus according to Claim 10 wherein the support includes a framework supporting one or more of the coil pairs, the framework permitting the abdomen of a mammal to intercept the magnetic field from the or each Helmholtz pair.
23. (canceled) An apparatus according to Claim 10 wherein the support includes a framework supporting one or more of the coil pairs, the framework permitting the abdomen of a mammal to intercept the magnetic field from the or each Helmholtz pair and wherein the framework includes at least one releasably securable member supporting a said loop, thereby permitting a mammal to enter and leave the vicinity of the or each magnetic field.
24. (canceled) An apparatus according to Claim 10 wherein the spacing between the or at least one said pair of loops is adjustable.

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25. (canceled) An apparatus according to Claim 10 wherein the size and/or position of the field coils of the or at least one said coil pair determine the frequency of oscillation of the magnetic field generated thereby.

26. (canceled) An apparatus according to Claim 10 wherein each loop of a said coil pair includes between 1 and 10 turns.

27. (canceled) An apparatus according to Claim 10 wherein each loop defines at least part of the frequency determining stage of a power oscillator.

28. (canceled) An apparatus according to Claim 10 wherein at least one of the said coils includes a capacitor oscillator operatively connected in parallel therewith whereby to provide a different resonant frequency, of the said coil, than that of the remainder of the coils.

1-80. (canceled)

Please add the following new claims.

81. (new) A method of operating an ingestible device for delivering a substance to a chosen or identifiable location in the alimentary canal of a human or animal, comprising causing a mammal to ingest an ingestible device comprising

an openable reservoir, for the substance, that is sealable against leakage of the substance;

an actuator mechanism for opening the reservoir;

an energy source, operatively connected for powering the actuator mechanism, comprising an extendable spring that exerts a force of between 2N and 20N over a distance of extension of 2mm to 20 mm; and

a releasable latch for controllably switching the application of power to the actuator from the energy source.

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82. (new) The method according to Claim 81 wherein the device comprises
a releasable latch for controllably switching the application of power to the actuator from
the energy source, and

a receiver of electromagnetic radiation, for operating the latch when the receiver detects
radiation within a predetermined characteristic range.

83. (new) The method according to Claim 81 including the step of generating two or
more axial, oscillating magnetic fields whose axes are mutually skewed.

84. (new) The method according to Claim 81 including the step of generating two or
more axial, oscillating magnetic fields whose axes are mutually skewed and including the step of
generating three fields, wherein the axes of the fields are mutually orthogonal.

85. (new) The method according to Claim 81 wherein each field is generated using a
coil pair operatively connected to a source of an oscillating current.

86. (new) An ingestible device for delivering a substance to a chosen or identifiable
location in the alimentary canal of a human or animal, comprising

an openable reservoir for the substance, that is sealable against leakage of the substance;

an actuator mechanism for opening the reservoir;

an energy source, operatively connected for powering the actuator mechanism

comprising an extendable spring exerting a force over a distance of extension of between 2N and
20N over a distance of 2mm to 20 mm;

a releasable latch for controllably switching the application of power to the actuator from
the energy source; and

a receiver of electromagnetic radiation, for operating the latch when the receiver detects

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radiation within a predetermined characteristic range.

87. (new) The device according to Claim 86 including a retainer for retaining moveable components within the device.

88. (new) The device according to Claim 86 wherein the spring comprises a wire having a diameter of about 0.8mm.

89. (new) The device according to Claim 86 wherein the spring defines a hollow cylinder.

90. (new) The device according to Claim 89 wherein the spring encircles one or more further components of the device.

91. (new) The device according to claim 86 wherein the spring has a minimal helical angle of approximately 15°.

92. (new) The device according to Claim 86 wherein the actuator mechanism includes a piston moveable under power from the spring for compressing the substance in the reservoir to promote its expulsion therefrom, the spring being engaged at one end directly or indirectly with the piston and secured at its other end to a member fixed relative to the remainder of the device.

93. (new) The device according to claim 86 wherein the receiver includes a core having coiled therearound a wire.

94. (new) The device according to claim 93 wherein the receiver comprises a ferrite core having coiled therearound a wire.

95. (new) The device according to claim 85 wherein the operating frequency range is between 1 MHz and 14 MHz.

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96. (new) The device according to claim 93 wherein the operating frequency is between 1 MHz and 3 MHz.

97. (new) The device according to claim 93 wherein the electromagnetic radiation is an oscillating magnetic field.

98. (new) The device according to claim 86 wherein the minimum separation between the energy source and the substance to be delivered is 0.1 mm to 1.0 mm.